Ahmed Salama

**Grade:** 4th (English Language Learners multiple proficiency levels

**Focus:** Electric Energy Consumption

**Content Objectives:**

SWBAT identify ways of saving electricity used for lighting.

SWABT measure, collects, compares and contrast data regarding different light bulbs.

**Language Objectives:**

SWABT will be able to ask and answer questions using comparatives and superlatives sentence structures.

SWBAT listen, speak, read and write in English for information.

**CCLS Addressed:**

**RI.4.9** Integrate information from two texts on the same topic in order to write or speak about the subject knowledgeably. (4-PS3-1)

**W.4.2** Write informative/explanatory texts to examine a topic and convey ideas and information clearly. (4-PS3-1)

**W.4.7** Conduct short research projects that build knowledge through investigation of different aspects of a topic. (4-PS3-2),(4-PS3-3),(4-PS3-4)

**Background:**

Students are familiar with the concepts of energy and energy sources such as electricity from fossil fuels, and are still learning about renewable energy sources.

**Key Vocabulary:** measure, light bulb, lumen, avometer, consumption, life span.

**Key Materials**: Incandescent, CFL, and LED light bulbs fixed on a wooden board and connected to electric switches, and avometers.

**Presentation**

**Essential Question:**

* How can we save electric energy at home?

**Connection:**

Teacher starts by reviewing and activating students’ background knowledge by posing the flowing questions asking students in pairs to turn and talk then share out with the rest of the class.

* Where does electricity come from?

Expected responses:

I don’t know.

From the wires/ wall.

Dams/power plants/burning coal, natural gas, wave, wind, the sun…etc.

* Why do we need electricity?

Expected responses:

For lighting, heating, cooking, to run the TV, computer…etc.

Teacher refers back to the essential question and instructs students to ask and answer the question in pairs.

Expected Responses:

Turn off lights/ electric devices when we don’t need them.

Let natural light in the house instead of turning on the light.

**Modeling:**

Teacher shows students an avometer and explicitly explains what avometers are used for.

Teacher models how to use an avometer to measure and record how much electricity a computer uses.

**Active Engagement:**

Teacher creates 4 stations, each with an avometer and a different kind of light bulb.

Teacher divides students into 4 groups of mixed proficiency levels.

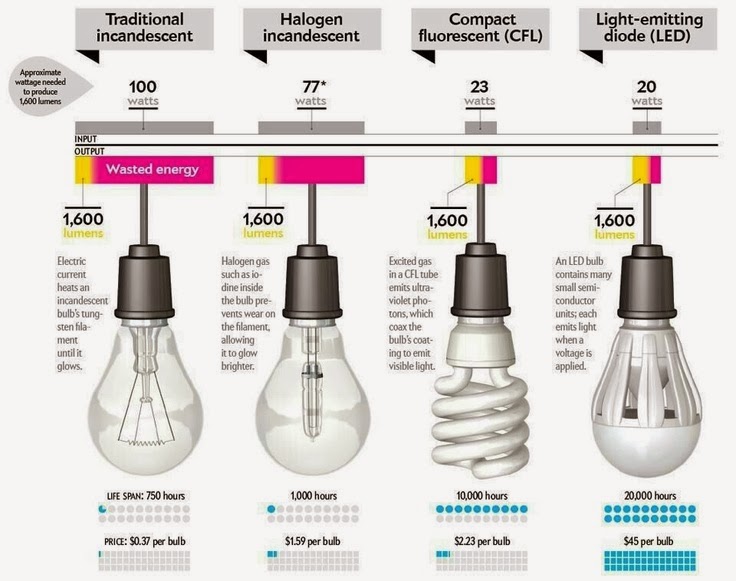
Teacher explains that the students’ task in each group is measure and record how much electricity each type of light bulbs uses.

Teacher provides students with a data sheet to fill in while measuring the kWh.

Group ( ) Station ( )

|  |  |
| --- | --- |
| Light Bulb Type |  |
| Lumens |  |
| Life Span |  |
| Price |  |
| Electricity Consumption |  |

Teacher provides each group with a resource sheet.



After students finish with measurement and data recording, each group shares their findings with the rest of the class.

Representative from each group are then selected to post their data on a pre-prepared chart .

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Type of Light Bulb** | **Lumen** | **Life Span** | **Price** | **kWh** |
| **Traditional Incandescent** |  |  |  |  |
| **Halogen Incandescent** |  |  |  |  |
| **Compact Fluorescent (CFL)** |  |  |  |  |
| **Light-Emitting Diode (LED)** |  |  |  |  |

Teacher asks students to look at the data and decide what they think is the most energy saving light bulbs. Students are reminded to talk about pros and cons of each light bulb.

**Assessment:**

Use information from the chart to write a letter to your friend giving her/him advice on which light bulb s/he should buy for their new apartment.

**Rubric:**

1. No response, irrelevant or unintelligible.
2. No use of data and numbers. No use punctuation. Minimally addresses topic.
3. Limited use of data and numbers. Limited use of punctuation.
4. Evident use of data and numbers. Language mistakes that not interfere with meaning.
5. Includes all relevant data and numbers. Impeccable use of language.